

AMENDMENTS TO THE CLAIMS

Claims 1-18 (Canceled)

19. (currently amended) A method of identifying a protein fold of a protein comprising the step of

classifying determining the distribution of amino acid residues in different thermodynamic environments of amino acid residues within the protein by determining energetic states, wherein the energetic states comprise entropy and enthalpy of an ensemble of the protein; and

identifying the protein fold by analyzing the energetic states to predict the protein fold of the protein.

corresponding to a known protein structure, wherein said distribution of amino acid residues identifies a protein fold in a protein;..

20. (currently amended) The method of claim 19, wherein the thermodynamic environments are selected from the group consisting offurther comprise determining the stability of the ensemble of the protein, enthalpy and entropy.

21. (currently amended) The method of claim 19, wherein determining classifying the thermodynamic environments distribution of amino acid residues comprises constructing scoring matrices derived of thermodynamic information.

22. (currently amended) The method of claim 21, wherein the scoring matrices are derived from COREX stability, enthalpy information, or entropy information or a combination thereof.

Claims 23-33 (Canceled)

34. (original) A computer-readable medium having computer-executable instructions for performing the steps recited in claim 19.

35. (original) A computer-readable medium having computer-executable instructions for performing the steps recited in claim 22.

Claims 36-38 (Canceled)